

Far Eastern Entomologist

Дальневосточный энтомолог

Journal published by Far East Branch
of the Russian Entomological Society
and Laboratory of Entomology, Federal
Scientific Center of the East Asia
Terrestrial Biodiversity, Vladivostok

Number 351: 1-16

ISSN 1026-051X

February 2018

<https://doi.org/10.25221/fee.351.1>

<http://urn:lsid:zoobank.org:pub:649C455D-B560-4171-87B9-9F4944887C27>

THE GENUS *ENTOMACIS* FOERSTER, 1856 (HYMENOPTERA: DIAPRIIDAE) IN SOUTH CHINA

V. G. Chemyreva^{1,2)}, Z.-F. Xu³⁾

1) Zoological Institute, Russian Academy of Sciences, Universitetskaya nab., 1, St Petersburg, 199034, Russia. E-mail: diapriidas.vas@gmail.com

2) Federal Scientific Center of the East Asia Terrestrial Biodiversity, Far Eastern Branch of the Russian Academy of Sciences, Vladivostok, 690022, Russia.

3) Department of Entomology, College of Natural Resources and Environment, South China Agricultural University, Guangzhou, 510640, P. R. China.

Summary. Twelve species of the genus *Entomacis* Foerster, 1856 are reviewed; six of them are newly recorded from China. A new species *E. clavata* Chemyreva, **sp. n.** (China, Guangdong) is described. New synonymies are proposed: *E. spinosa* Rajmohana et Narendran, 2006 = *E. leptocera* Chemyreva, 2015, **syn. n.**; *E. balloona* Rajmohana et Narendran, 2006 = *E. curticerca* Chemyreva, 2014, **syn. n.** The sex of type series of *E. canonica* Chemyreva, 2015 is corrected and male of this species is described. Key to eleven species of *Entomacis* occurring in China is provided.

Key words: Hymenoptera, Diapriidae, *Entomacis*, taxonomy, new species, new synonymies, new records, key, China.

В. Г. Чемырева, Ц.-Ф. Сю. Род *Entomacis* Foerster (Hymenoptera: Diapriidae) Южного Китая // Дальневосточный энтомолог. 2018. N 351. С. 1-16.

Резюме. Дается обзор 12 видов рода *Entomacis* Foerster, 1856, шесть из которых приводятся впервые для Китая. Описан новый вид *E. clavata* **sp. n.**

(Китай, Гуандун). Установлена новая синонимия: *E. spinosa* Rajmohana et Narendran, 2006 = *E. leptocera* Chemyreva, 2015, **syn. n.**; *E. balloona* Rajmohana et Narendran, 2006 = *E. curticerca* Chemyreva, 2014, **syn. n.** Выяснен пол у типовой серии *E. canonica* Chemyreva, 2015 и описан самец этого вида. Приводится определительная таблица встречающихся в Китае 11 видов рода *Entomacis*.

INTRODUCTION

The genus *Entomacis* Foerster, 1856 includes the smallest wasps of the Diapriidae from the tribe Spilomicrini. The known hosts of *Entomacis* species are the members of different Diptera families, mainly Ceratopogonidae and Thaumaleidae (Macek, 2000; Sinclair, 2000; Masner & García, 2002). This genus combines 56 species from the World fauna (Jonson, 1992; Macek, 2000; Yoder, 2004; Rajmohana, 2006; Chemyreva, 2014, 2015). Only eleven species of *Entomacis* were known in the Oriental region, six of them were recorded from India (Sharma, 1979; Rajmohana, 2006) and five from South China. In China, *Entomacis platyptera* (Haliday) and *E. graeffei* Kieffer were recorded from Sichuan, *E. kasparyani* Chemyreva and *E. canonica* Chemyreva from Hubei and Sichuan, and *E. leptos* Chemyreva from Yunnan (Chemyreva, 2015). During study of material collected in Hainan, Yunnan and Guangdong from collections of Department of Entomology, College of Natural Resources and Environment, South China Agricultural University (Guangzhou) and Zoological Institute of the Russian Academy of Sciences (St Petersburg) four specimens were found belonging to an undescribed species. Furthermore, *E. alticeps* Chemyreva, *E. laticeps* Chemyreva, *E. penelope* Nixon, *E. perplexa* (Haliday), *E. balloona* Rajmohana et Narendran and *E. spinosa* Rajmohana et Narendran are newly recorded from China. The four former are found for the first time in the Oriental region.

MATERIAL AND METHODS

Material for this study was collected in South China using yellow pan traps and by net sweeping. Type material of the new species is deposited in the Zoological Institute RAS, St Petersburg, Russia (ZISP), in the collection of the South China Agricultural University, Guangzhou, China (SCAU). Another types involved in the study are kept in Canadian national collection of insects, Ottawa, Canada (CNCI). The morphological terminology and abbreviations are used following Masner & García (2002), Yoder (2004) and Hymenoptera Anatomy Ontology Portal (Yoder et al., 2010). All measurements follow Yoder (2004) and Chemyreva (2015). New records are asterisked (*). The following abbreviations are used in the text: A1–A13 – antennomeres; CH – Chen Hua-yan, MGS – multiporous gustatory sensilla on ventral side of clavomeres of female, T, S – metasomal terga and sterna respectively, LOL – lateral-ocular length, OOL – ocello-ocular line, POL – postocellar line, PT – Primorskiy Territory. The type material of *Entomacis balloona* and *E. spinosa* were investigated by Dr. Rajmohana S. Kumar (India). Authors of this paper studied photos of the types, original descriptions and discussion. The photographs were obtained using a Leica M165 stereomicroscope equipped with a Leica DFC450 camera and with a digital camera (CoolSNAP) attached to a Zeiss Stemi 2000-CS stereomicroscope. Image stacking was performed with Helicon Focus 5.0.

TAXONOMY

Genus *Entomacis* Foerster, 1856

Entomacis Foerster, 1856: 121, 123 (without included species); Marshall, 1873: 10 (two included species).

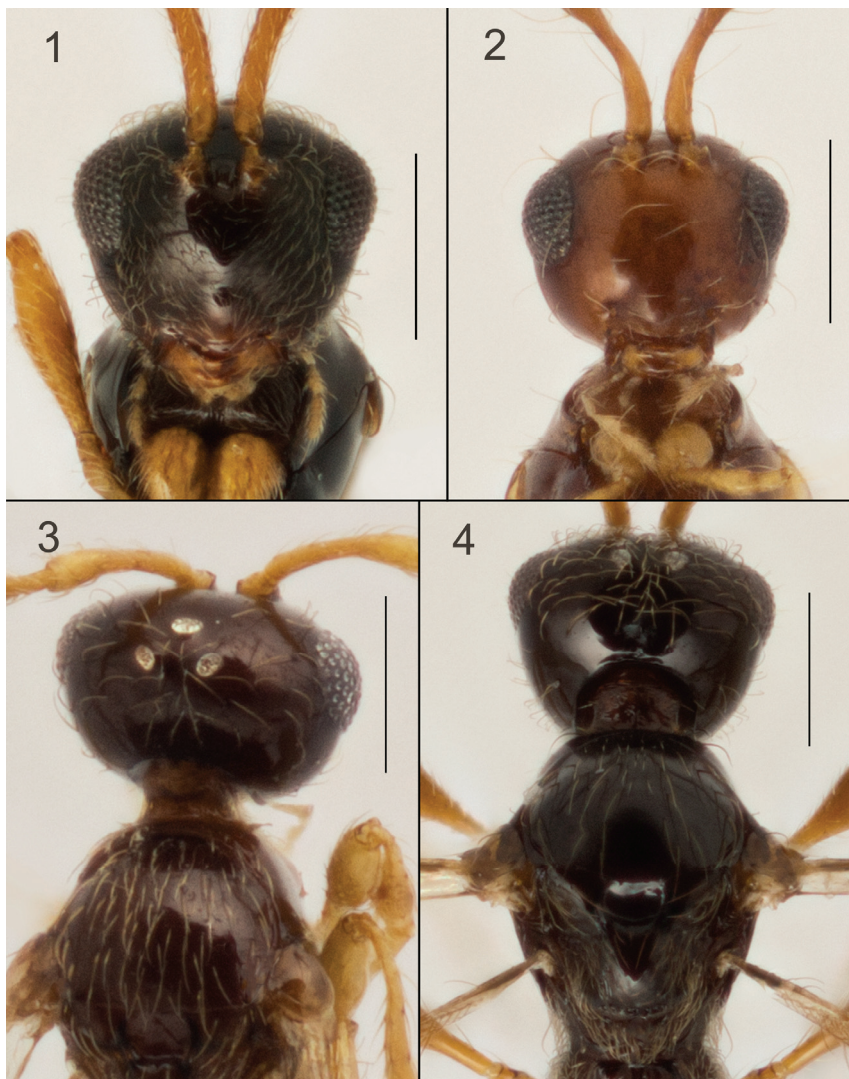
Type species: *Diapria* (*Glyphidopris*) *platyptera* Haliday, 1857, by subsequent designation of Muesebeck & Walkley, 1951: 673 (from two included species by Marshall, 1873).

Gender: Feminine. According to articles 31.2 and 34.2 of Code (ICZN, 1999) the ending of a Latin or latinized adjectival or participial species-group name must agree in gender with the generic name.

Key to *Entomacis* species from China

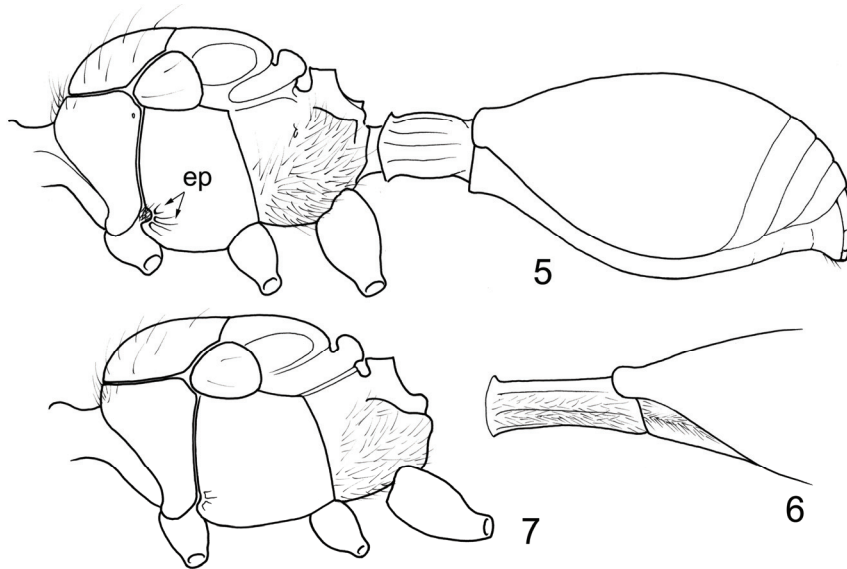
1. Propodeum setose dorsally 2
- Propodeum bare dorsally 10
2. Costa tubular completely. Notauli completely absent 3
- Costa absent or nebulous, or sclerotize only at basal half. Notauli present, complete or incomplete 7
3. Head, face, mesoscutum entirely or only its anterior part with dense recumbent setae (Figs 1, 3, 4). Base of T2 shifted anteriorly in lateral view (Fig. 6) 4
- Head, face and mesoscutum entirely with scattered erect setae (Fig. 2). Base of T2 not shifted anteriorly in lateral view (Fig. 5) 6
4. Mesoscutum entirely with recumbent setae (Fig. 3). T3–T5 of female fused together. Connection between clavomeres of female located medially (Fig. 8) *E. kasparyani* Chemyreva
- Mesoscutum only in anterior part with recumbent setae (Fig. 4). Female T3–T5 not fused together. Connection between clavomeres of female located dorsally (Figs 9, 10) 5
5. Blade of median propodeal keel very high (Fig. 11). Area between upper plicae on dorsal side of propodeum narrower its median length (Fig. 12). Female A13 as wide as A12; A11–A13 dark brown, A1–A10 yellowish brown (Fig. 9). Body reddish brown *E. alticeps* Chemyreva
- Blade of median propodeal keel not so high (Fig. 13). Area between upper plicae on side of propodeum wider its median length (Fig. 14). Female A13 wider than A12; A3–A13 brown, gradually darkened apically (Fig. 10). Body dark brown .. *E. leptos* Chemyreva
6. Metanotum with distinctly projecting median keel. Marginal vein $2.7\text{--}3.2 \times$ as long as stigmal vein. Female A3 longer than A2. Body yellowish red. Basal vein absent. Male A3 $1.3\text{--}1.5 \times$ as long as A4 *E. spinosa* Rajmohana et Narendran
- Metanotum with low median keel. Marginal vein as long as stigmal vein. Female A3 equal or weakly shorter than A2. Body dark. Basal vein weakly or distinctly pigmented. Male A3 as long as A4 *E. penelope* Nixon

7. Head and face with dense recumbent pale setae. Male antenna shortened and robust, A3 as long as A2 (Fig. 17). Female with abrupt 7-segmented clava (Fig. 18) ***E. clavata* sp. n.**
- Head and face with scattered erect setae. Male antenna long and slender, A3 distinctly longer than A2 (Figs 22, 23). Female with non-abrupt clava (Figs 20, 21) 8



Figs 1–4. Pubescence of *Entomacis*: 1, 4 – *E. leptos*; 2 – *E. spinosa*; 3 – *E. kasparyani*. 1, 2 – face; 3, 4 – head and mesosoma, dorsal view.

8. Upper mesonotal suture bare. Epicnemial pit absent. Lateral grooves on S2 present. Male A5–A13 fusiform (Fig. 25). Female A4–A12 with cingulum of setae medially, without MGS brash ventrally (Fig. 26) *E. canonica* Chemyreva
- Upper mesonotal suture setose. Epicnemial pit present. Lateral grooves on S2 absent. Male A5–A13 cylindrical (Figs 22, 23). Female A4–A12 entirely pubescent, clavomeres with MGS brash ventrally (Figs 20, 21) 9



Figs 5–7. *Entomacis* spp. 5 – *E. perplexa*, mesosoma and metasoma, lateral view (*ep* – epicnemial pit); 6 – *E. alticeps*, anterior part of metasoma, lateral view; 7 – mesosoma, lateral view (schematic). (Figs 5–7 from Chemyreva, 2015).

9. Distal margin of fore wing deeply emarginate. Female A10–A13 with MGS sensilla; shape, size and proportion of A11 same as in A12 (Fig. 21). Male A4 without emargination, with straight keel from base to apex of segment, (Fig. 22) *E. platyptera* (Haliday)
- Distal margin of fore wing truncate, rounded or arcuate. Female A8–A13 with MGS sensilla; shape, size and proportion of A10 same as in A11 and A12 (Fig. 20). Male A4 with emargination and keel from half to 2/3 of segment length (Fig. 23) *E. laticeps* Chemyreva
10. Notauli complete throughout. Propodeum in dorsal view elongated. Male A13 longer than A12 *E. graeffei* Kieffer
- Notauli incomplete, reduced anteriorly. Propodeum in dorsal view transverse or sometimes subquadrate. Male A13 shorter than A12 11

11. Length of head in lateral view $0.67\text{--}0.77 \times$ its height, with weakly prominent antennal shelf. Epicnemial pit of female with straight or weakly arcuated anterior margin (Fig. 7); setae absent between anterior margin of epicnemial pit and posterior margin of pronotum (Fig. 7). Male A4 thickened, longer than A3; A5–A13 shortened *E. balloona* Rajmohana et Narendran
- Length of head in lateral view $0.86\text{--}0.88 \times$ its height, with distinctly prominent antennal shelf. Epicnemial pit of female with arcuate anterior margin (Fig. 5); setae present between anterior margin of epicnemial pit and posterior margin of pronotum (Fig. 5). Male A4 slender, as long as A3; A5–A13 distinctly elongate *E. perplexa* (Haliday)

***Entomacis alticeps* Chemyreva, 2015**

Figs 6, 9, 11, 12

Entomacis alticeps Chemyreva, 2015: 12, ♀, ♂, holotype: ♀, Japan, Aichi Prefecture, Mt. Sanage-yama, 9–15.V.1989, A. Takano (CNCI), examined.

MATERIAL EXAMINED. **China:** Guangdong, Nanling National Nature Reserve, 8–17.VIII.2010, 1♂, CH (SCAU).

DISTRIBUTION. Japan (Honshu, Kyushu), *China (Guangdong).

***Entomacis balloona* Rajmohana et Narendran, 2006**

Entomacis balloonus Rajmohana, 2006: 51, ♂, holotype, India, Kerala, Idukki, Munnar, 3.XI.1988, T. Narendran.

Entomacis curticerca Chemyreva, 2014: 193, **syn. n.**; 2015: 4, 5.

MATERIAL EXAMINED. Holotype of *E. curticerca*: ♀, “Russia, PT, vicinity of Spassk-Dal’niy, Vasilievka, 13.VII.1993, S. Belokobylskij”, “*Entomacis curticerca* Chemyreva, 2014” (ZISP). Paratypes of *E. curticerca*: **Russia:** Primorskii krai, Spassk-Dal’niy, 4–10.IX.2001, 16♀, 1♂, S. Belokobylskij; Kamenushka, 25–27.VII.2010, 1♀, E. Tselikh., D. Rachin; vicinity of Spassk-Dal’niy, Evseevka, 17.IX.1987, 1♀, S. Belokobylskij; Ussuriysk District, Gornotayozhnoye, 43°66’N, 132°25’E, 11–12.IX.1999, 1♂, M. Michailovskaya; Gornotayozhnoye, 17–23.VII.2003, 2♀, M. Michailovskaya; Lazo Nature Reserve, VII.2007, 5♀, K. Makarov; Amurskaya oblast, Zeya Nature Reserve, 7–10.VII.1981, 2♀, V. Alekseev. ADDITIONAL MATERIAL. **China:** Yunnan, Zhaotong, Huanghua Town, 7–9.X.2012, 8♀, 6♂, Shi-wen Yang; Guangdong, Nankunshan Nature Reserve, 23.V.2010 and 25–30.VII.2010, 10♀, 4♂, CH; Guangdong, Huizhou Xiangtoushan mountain, 8.V.2010, 1♀, CH; Guangdong, Nanling National Nature Reserve, 8–17.VIII.2010, 1♀, CH; Guangdong, Nankunshan National Forest Park, 29.VI.2015, 1♀, V. Chemyreva; Guangdong, Wangzi National Forest Park, 22.VI.2015, 1♀, V. Chemyreva; Hainan, Lingshui Diaoluoshan mountain, 12, 13.VII.2010, 1♀, CH (SCAU, ZISP).

VARIATION. Body length 1.4–1.7 mm. Male A10–A11 transverse to subglabrous shape; A7 weakly elongate to subglabrous shape. Male A3 and A4 equal or A3 distinctly shorter than A4. Basal vein and 1CU pigmented and sclerotized to nebulous.

COMMENTS. The holotype of *Entomacis balloona* is the male, and the original description was given only for the male (Rajmohana, 2006). The description and illustration of female see Chemyreva (2014, 2015) as *Entomacis curticerca* Chemyreva.

DISTRIBUTION. Russia (Primorskii krai, Amurskaya oblast), Republic of Korea (Gyeongsangnam-do, Gangwon-do; Chungcheongbuk-do), Japan (Hokkaido, Honshu, Kyushu), *China (Yunnan, Guangdong, Hainan), India (Kerala).



Figs 8–10. Antenna of *Entomacis*, lateral view. 8 – *E. kaspariyani*; 9 – *E. alticeps*; 10 – *E. leptos*.

***Entomacis canonica* Chemyreva, 2015**

Figs 24–26

Entomacis canonica Chemyreva, 2015: 19, ♀, ♂, holotype: ♀, Japan: Oita, Shonai, Oike, 25.IX 1996, L. Masner, s.s. J-62 (CNCI), examined.

MATERIAL EXAMINED. **China:** Yunnan, Zhaotong, Huanghua Town, 7–9.X 2012, 1♂, Shi-wen Yang; Guangdong, Nankunshan Nature Reserve, 23.V 2010, 3♀, CH; Guangdong, Nanling National Nature Reserve, 8–17.VIII 2010, 1♂, CH; Guangdong, Nankushan National Forest Park, 29.VI 2015, 1♀, V. Chemyreva; Hainan, Yinggeling Nature Reserve, 17.VII 2010, 1♂, CH (SCAU, ZISP).

COMMENTS. Holotype of this species was described as male (Chemyreva, 2015), but designation of the sex in the types have been wrong. Actually, all type specimens (holotype and four paratypes) are females.

DESCRIPTION. Male (hitherto unknown) (Figs 24, 25). Body length 1.4–1.6 mm. Similar to female, but differs mainly in antennal structures and metasoma construction. Antenna as long as whole body length or longer, A1 and A2 yellowish brown, follows segments brown. A3 entirely with long setae. A4 with emargination and keel developed from base to 3/4 of segments length or to top of segments. A4–A13 with ranges of long setae medially, A5–A13 fusiform (Fig. 25). Ratios of length to width of antennal segments: 16:3; 6:3.5; 10:2.5; 9:3.5; 8:3; 8:3; 8:3; 8:3; 7.5:3; 7:3; 7:3; 6.5:3; 7.5:2.5. Petiole longer than female and distinctly elongate (13:5), distinctly paler than mesosoma, yellowish brown to brown.

VARIATION. Body length 1.4–1.7 mm. A1 and A2 yellow to yellowish brown. A3 yellow to brown. A10–A12 elongated and fusiform to almost globe shaped. Propodeum and petiole pale brown, distinctly paler than mesosoma. Upper mesonotal suture of all specimens asetose.

DISTRIBUTION. Japan (Honshu, Kyushu), China (Yunnan, Hubei, *Guangdong, *Hainan).

***Entomacis clavata* Chemyreva, sp. n.**

Figs 15–19

TYPE MATERIAL. Holotype: ♀ (ZISP), **China**: Guangdong Prov., Nankushan National Forest Park, 29.VI 2015, V. Chemyreva. Paratypes: **China**: Guangdong Prov., Nanling National Nature Reserve, 8–17.VIII 2010, 1♂, CH; same place, 22–24.VIII 2010, 1♀, Xu Zai-fu (SCAU); same label as holotype, 1♀ (ZISP).

DESCRIPTION. Holotype. Female. Body length 1.9 mm; fore wing length 1.9 mm; antenna length 1.3 mm.

Colour. Mesosoma and metasoma dark brown; head black; palpi, mandible, legs and A1–A5 yellow; A6 yellowish brown; A7–A13 brown.

Head in dorsal view transverse (23:15), wider than mesosoma (23:18), antennal shelf weakly developed. Head with numerous semi-recumbent setae, in lateral view higher than long (20:15). Face smooth and pubescent (Fig. 19). Tentorial pit large. Malar sulcus distinct. Clypeus convex, circular, smooth and pubescent. Epistomal sulcus distinct. Ratio of distance between pleurostomal carinae to width of head 6:22. Mandible short, strongly overlapping, bidentate, upper tooth longer. Eye bare, large, higher than half of head (11:10), oval (11:9); height of eye/malar area 11:5. Ocelli large; LOL equal to width of anterior ocellus; POL equal to half of OOL. Occipital flange narrow.

Antennomeres without tiloids, with numerous semi-recumbent setae. Scape cylindrical and smooth. Antennae with abrupt 7-segmented clava (Fig. 18), clavomeres weakly compressed; A7–A13 with MGS brush. In lateral view, connection between clavomeres located dorsally (Fig. 18). Ratios of length to width of A1–A13 in dorsal view: 20:4; 7:4; 6:2.5; 5.5:3; 5.5:3; 5.5:3.5; 6:4; 6:4.5; 6:4.5; 6:4.5; 5.5:4.5; 5:4; 8:4.

Mesosoma. Mesosoma in dorsal view longer than wide (30:18); in lateral view distinctly longer than high (30:22). Neck bare, with prolong grooves. Pronotum smooth, with few setae medially on dorsal side. Pronotal shoulders distinctly convex. Propleuron and mesopleuron on ventral side with dense silver pubescence. Mesopleuron on lateral side smooth and bare. Matt mesopleural spot indistinct. Acetabular carina projecting. Epicnemial pit present and pubescent. Mesoscutum wider than long (25:15), with few long setae; notauli complete; humeral sulcus narrow, developed along all lateral margin. Anterior scutellar pit transverse (7:5). Lateral scutellar pit narrow and shallow. Axillar depression with dense long setose. Posterior scutellar pits fused together in deep groove. Metascutellum pubescent, with low irregular sculpture on lateral side; median keel low, lateral keel more projecting. Mesopleural suture entire setose. Propodeum entirely dense setose, convex dorsally. Area between upper plicae on dorsal side of propodeum wider than median length (9:8). Median propodeal keel complete, low, evenly projected (Fig. 16). Upper and lower plicae weakly projected, plical process small. Nuchal area pubescent.



Figs 11–14. *Entomacis* spp. 11, 12 – *E. alticeps*; 13, 14 – *E. leptos*. 11, 13 – propodeum lateral view; 12, 14 – propodeum, dorsal view.

Wing. Apex of fore wing rounded. Costa sclerotize in basal half only. Submarginal vein tubular, pigmented. Distal RS, distal M and distal CU absent, M+CU absent, basal vein and 1CU weakly pigmented. Marginal vein longer than wide (8:3), shorter than stigmal vein (8:9). Ratio of width to length of fore wing 2:4.

Metasoma. Petiole in dorsal view longer than its median width (7:5), cylindrical, with shallow longitudinal grooves; on ventral side bare, on lateral with few long setae. Apex of metasoma in dorsal view pointed. T2 smooth and bare, T2 notch distinct, T2 lateral grooves absent. Base T2 and S2 on Fig. 2. T3–T6 of type dirty. S2 without lateral and medial grooves, with trace of setose line.

MALE. Body length 2.1 mm. Antenna as long as 2/3 of body (Fig. 15), A1–A4 yellow, follows segments gradually darkened apically. A4 with emargination and keel developed from base to top of segments (Fig. 17). Ratios of length to width of A1–A13: 20:4; 8:4; 10:3; 10:3.5; 8:3.5; 7:2.5; 7:3.5; 7:4; 7:4; 7:4; 7:3.5; 6.5:3.5; 8:3. Petiole longer than female and distinctly elongate (8:3).

DIAGNOSIS. *Entomacis clavata* sp. n. differs from all known Palaearctic and Oriental species by the following combination of the characters: head and face with numerous semi-recumbent setae; female antenna with abrupt 7-segmented clava; malar sulcus distinct; notauli complete; propodeum entirely dense setose. The new species is the most closely related to *E. laticeps* from which it distinctly differs by following characters: the head and face densely pubescent; female antenna with abrupt 7-segmented clava; male antenna robust, as long as 2/3 of body; apex of fore wing rounded and costa sclerotize in basal half.

ETYMOLOGY. Derived from Latin *clava*, with reference to the female antenna with abrupt clava.

DISTRIBUTION. China (Guangdong).

***Entomacis graeffei* Kieffer, 1909**

Entomacis graeffei Kieffer, 1909: 388, ♀, lectotype, Italy, Trieste, Graeffe leg. (NHMV; Vienna).

MATERIAL EXAMINED. **China:** Yunnan, Zhaotong, Huanghua Town, 5–7.VIII, 5–7.IX, 7–9.X 2012, 28♀, 6♂, Shi-wen Yang; Nankunshan Nature Reserve, Guangdong, 23.V 2010, 6♀, CH; Guangdong, Huizhou Xiangtoushan mountain, 8.V 2010, 2♀, 1♂, CH; Guangdong, Nanling National Nature Reserve, 8–17.VIII 2010, 1♀, CH; Guangdong, Nankushan National Forest Park, 29.VI 2015, 4♀, 1♂, V. Chemyreva (SCAU, ZISP).

VARIATION. Body length 1.6–2.5 mm. Body dark brown to brown. Female A3–A13 dark brown to yellowish brown; A2 as long as A3 to distinctly longer; A9–A12 subglobular shape to elongate; A3–A7 fusiform to rare cylindrical; A13 as wide as A12 to weakly wider. Male antenna dark brown to pale brown. Median keel on metascutellum high to weakly projecting. T2 notch short to reaching 1/3 length of segments. T2 lateral grooves deep and distinct to small and shallow.

DISTRIBUTION. United Kingdom, Sweden, Czech Republic, Austria, Italy, Russia (European part, Western and Eastern Siberia, Far East), Republic of Korea (Gyeongsangnam-do, Gangwon-do), Japan (Hokkaido, Honshu, Shikoku), China (Sichuan, Yunnan, *Guangdong).

***Entomacis kasparyani* Chemyreva, 2014**

Figs 1, 8

Entomacis kasparyani Chemyreva, 2014: 195, ♀, ♂, holotype: ♀, Russia, Primorskii krai, Gornotayozhnoye, 43°66'N, 132°25'E, 16–18.IX 1999, M. Michailovskaya (ZISP), examined.

MATERIAL EXAMINED. **China:** Guangdong, Nankunshan Nature Reserve, 23.V 2010 and 25–30.VII 2010, 2♀, 2♂, CH; Guangdong, Nanling National Nature Reserve, 8–17.VIII 2010, 1♂, CH; Guangdong Prov., Nankushan National Forest Park, 29.VI 2015, 2♀, V. Chemyreva (SCAU, ZISP).



Figs 15–19. *Entomacis clavata* sp. n. 15, 16 – habitus, lateral view (15 – male, 16 – female); 17, 18 – antenna, lateral view (17 – male, 18 – female); 19 – face female.

VARIATION. Body length 1.4–2.2 mm. Body entirely pale brown to mesosoma and completely yellowish brown or only metascutellum, propodeum and petiole yellowish brown, elongate 2.8–2.0 times longer than wide. T2 distinctly arcuate.

DISTRIBUTION. Russia (Primorskii krai), Japan (Hokkaido, Honshu, Shikoku, Okinawa), Republic of Korea (Gangwon-do), China (Sichuan, Hubei, *Guangdong).

***Entomacis laticeps* Chemyreva, 2015**

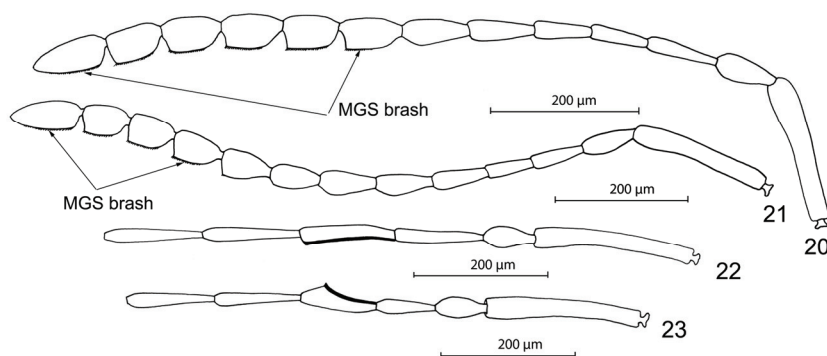
Figs 20, 23

Entomacis laticeps Chemyreva, 2015: 16, ♀, ♂, holotype: ♀, Japan, Okinawa, Yona, Ryukyu Univ. Res Station, V 1999, B. Sinclair (CNCI), examined.

MATERIAL EXAMINED. **China:** Hainan, Lingshui Diaoluoshan mountain, 12–13.VII 2010, 7♀, 7♂, CH (SCAU, ZISP).

VARIATION. Body length 1.4–1.7 mm.

DISTRIBUTION. Japan (Kyushu, Okinawa), *China (Hainan).



Figs 20–23. *Entomacis* spp. 20, 23 – *E. laticeps*, 21, 22 – *E. platyptera*. 20–23 – antenna (20, 21 – female, lateral view; 22, 23 – male, dorsal view).

***Entomacis leptos* Chemyreva, 2015**

Figs 1, 4, 10, 13, 14

Entomacis leptos Chemyreva, 2015: 9, ♀, ♂, holotype: ♀, Japan, Nara, Shimoichi, Nui, creek, 34°18'30"N, 135°49'E, L. Masner (CNCI), examined.

MATERIAL EXAMINED. **China:** Guangdong, Nankunshan Nature Reserve, 25–30.VII 2010, 2♂, CH; Guangdong, Nanling National Nature Reserve, 8–17.VIII 2010, 1♀, CH; Hainan, Lingshui Diaoluoshan mountain, 12–13.VII 2010, 21♀, 28♂, CH.

VARIATION. Specimens very similar to each other and most of them collect in the same lomatation. Body length 1.7–2.2 mm.

DISTRIBUTION. Japan (Hokkaido, Honshu, Kyushu), Republic of Korea (Gang-woon-do), China (Yunnan, *Guangdong, *Hainan)

***Entomacis penelope* Nixon, 1980**

Entomacis penelope Nixon, 1980: 12, ♀, holotype, Ireland: Sligo, Bundoran, vii.J933, G. E. J. Nixon (BMNH).

MATERIAL EXAMINED. **China:** Hunan, Mangshan Nature Reserve, 13.VIII 2010, 1♂, CH; Guangdong, Nankunshan Nature Reserve, 25–30.VII 2010, 1♀, CH;

Guangdong, Nanling National Nature Reserve, 8–17.VIII 2010, 2♂, CH; Hainan, Yinggeling Nature Reserve, 16–20.XI 2008, 1♂, Tang Yali (SCAU).

VARIATION. Body length 1.5–2.2 mm.

DISTRIBUTION. Ireland, Czech Republic, Austria, Russia (European part, Eastern Siberia, Far East), Japan (Hokkaido, Honshu, Shikoku), *China (Hunan, Guangdong, Hainan).

***Entomacis perplexa* (Haliday, 1857)**

Fig. 5

Diapria (*Glyphidopris*) *perplexa* Haliday, 1857: 172 Haliday (1857) did not explicitly designate a type for *E. perplexa* and the repository of specimens he examined. Masner (1965) and Macek (2000) did not locate any type material for this species.

MATERIAL EXAMINED. **China:** Yunnan, Zhaotong, Huanghua Town, 5–7 and 7–9.X 2012, 14♀, 2♂, Shi-wen Yang (SCAU).

VARIATION. Body length 1.5–2.0 mm. Male antenna shortened, A7–A11 1.4–3.0 times longer than wide. Nuchal area poorly to densely pubescent.

DISTRIBUTION. Germany, Czech Republic, Slovakia, Austria, Hungary, Poland, Moldova, Russia (European part, North Caucasus, Ural, Western and Eastern Siberia, Far East), Japan (Hokkaido, Honshu, Kyushu), *China (Yunnan), USA, Canada.

***Entomacis platyptera* (Haliday, 1857)**

Figs 21, 22

Diapria (*Glyphidopris*) *platyptera* Haliday, 1857: 172. Haliday (1857) did not explicitly designate a type for *E. perplexa* and the repository of specimens he examined. Masner (1965) and Macek (2000) did not locate any type material for this species.

MATERIAL EXAMINED. **China:** Yunnan, Zhaotong, Huanghua Town, 7–9.X 2012, 20♀, 3♂, Shi-wen Yang; Guangdong, Nanling National Nature Reserve, 8–17.VIII 2010, 20♀, 4♂, CH; same place, 22–24.VIII 2010, 1♀, Xu Zai-fu; same place, 17.VIII 2010, 2♀, 3♂, CH; Huizhou Xiangtoushan mountain, Guangdong, 8.V 2010 (CH) 2♂; Guangdong, Nankunshan Nature Reserve, 23.V 2010 and 25–30.VII 2010, 10♀, 5♂, CH; Guangdong, Zhaoqing Xiwanggu, 2–6.VIII 2010, 1♂, CH; Hainan, Lingshui Diaoluoshan mountain, 12, 13.VII 2010, 5♀, CH; Hainan, Yinggeling Nature Reserve, 13.VIII 2010, 9♀, 1♂, CH; same place, 16–20.XI 2008, 4♀, 1♂, Tang Yali (SCAU, ZISP).

VARIATION. Body length 1.3–1.7 mm. All body yellow brown to dark brown; antenna of female yellowish brown to brown. Malar sulcus visible as weak trace to absent. A3–A4 or A3–A6 cylindrical. Male antenna distinctly longer than body length to as long as body. Male A3 equal to A4 or A3 distinctly shorter than A4. Two lobes at each side of wing notch equal (in all females and part of males) to different size (in some males). Wing 2.4–3.8 times longer than wide.

DISTRIBUTION. Ireland, United Kingdom, Sweden, Finland, Poland, Czech Republic, Austria, Russia (European part, Western and Eastern Siberia, Far East), Republic of Korea (Gangwon-do, Gyeongsangnam-do, Chungcheongbuk-do), Japan (Hokkaido, Honshu), China (Sichuan, *Yunnan, *Guangdong, *Hainan).



Figs 24–26. *Entomacis canonica*. 24 – habitus, male; 25 – antenna, male; 26 – antenna, female.

***Entomacis spinosa* Rajmohana et Narendran, 2006**

Fig. 2

Entomacis spinosus Rajmohana, 2006: 56, ♀, holotype, India, Kerala, Tiruvannur, 17.XI 1994, Mohana (Rajmohana S. Kumar).

Entomacis leptocera Chemyreva, 2015: 14, **syn. n.**

MATERIAL EXAMINED. Holotype of *E. leptocera*: ♀, “Japan. Ryukyu, Ishigaki Is., 17.XI 1996, K. Takahashi” (CNCI). Paratypes of *E. leptocera*: **Republic of Korea**: Chungcheongnam-do, Keumsan, Posok-sa, 29.IX–13.X 2002, 1♀, P. Tripotin (CNCI); **Japan**: Ryukyu, Ishigaki-jima, 19–21.X 1999, 1♀, S. Belokobylskij (ZISP); Inagishi, Tokyo, 28.VII 1980, 10♀, 4♂, C. Yoshimoto (CNCI); Miyazaki, Kitago, Inohea, creek, 31°43'N, 131°23'E, 21.IX.1996, 3♀, L. Masner (CNCI); Ibaraki, Tsukuba, Expo Site, 5–11.VIII 1989 and Tsukuba, marsh, 29.VIII–6.IX 1989, 2♀, M. Sharkey (CNCI); same label as holotype, 2♀, K. Takahashi; Kyushu, Mt. Tachibana, Fukuoka, 19–25.VIII 1979, 1♂, K. Yamagishi (CNCI). ADDITIONAL MATERIAL. **China**: Guangdong, Zhaoqing Xiwanggu, 2–6.VIII 2010, 2♀, 1♂, CH; Guangdong, Nankunshan Nature Reserve, 25–30.VII 2010, 1♀, CH; Hainan, Lingshui Diaoluoshan mountain, 12, 13.VII 2010, 3♂, CH; Hainan, Yinggeling Nature Reserve, 16–20.XI 2008, 1♀, 1♂, Tang Yali (SCAU).

VARIATION. Body length 1.5–1.9 mm. Body yellow to reddish brown. Female A10–A13 brown to yellow; A3 1.7–1.2 times longer than A2. Male A5–A7 3.5–5.4 times longer than wide.

COMMENTS. The original description of *Entomacis spinosa* is given only for female. For male description and illustration see Chemyreva (2015) as *Entomacis leptocera*.

DISTRIBUTION. Republic of Korea (Chungcheongnam-do), Japan (Honshu, Kyushu, Ishigaki-jima), *China (Guangdong, Hainan), India (Kerala).

ACKNOWLEDGEMENTS

We are very thankful to Dr Sergey A. Belokobylskij (ZISP) for his help with the first draft of manuscript and constant support, to Dr Rajmohana S. Kumar (Zoological Survey of India, Western Ghat Regional Centre, Calcutta) for study of the type material, and Dr Alexander P. Rasnitsyn (Palaeontological Institute RAS, Moscow, Russia) for the opportunity to prepare some photos for the paper. This study was supported by the Russian Foundation for Basic Research (project No. 16–04–00197 and No 17–304–50018) and the National Natural Science Foundation of China (31272351, U0936601).

REFERENCES

- Chemyreva, V.G. 2014. Genus *Entomacis* Foerster, 1856 (Hymenoptera: Diapriidae) in the fauna of Russia, with description of two new species. *Proceedings of the Russian Entomological Society*, 85(1): 191–198.

- Chemyreva, V.G. 2015. The genus *Entomacis* Foerster, 1856 (Hymenoptera: Diapriidae) in the Eastern Palearctic. *Far Eastern Entomologist*, 294: 1–22.
- Foerster, A. 1856. *Hymenopterologische Studien. II Heft. Chalcidiae und Proctotrupii*. Aachen: Ernst ter Meer. 152 pp.
- Haliday, A.H. 1857. Note on a peculiar form of the ovaries observed in a hymenopterous insect, constituting a new genus and species of the family Diapriidae. *Natural History Review*, 4: 166–174.
- International Commission on Zoological Nomenclature (ICZN). 1999. *International Code of Zoological Nomenclature. Fourth Edition*. ITZN, London. i–xxx + 1–306.
- Johnson, N.F. 1992. Catalog of World species of Proctotrupoidea, exclusive of Platygasteridae (Hymenoptera). *Memoirs of the American Entomological Institute*, 51, 1–825.
- Kieffer, J.J. 1909. Description de nouveaux diapriides et belytides d'Europe. *Annales de la Societe Scientifique de Bruxelles. Memoires*, 33: 381–393.
- Macek, J. 2000. Revision of the genus *Entomacis* in Europe (Hymenoptera: Diapriidae). *Folia Heyrovskyana*, 8(2): 119–126.
- Marshall, T.A. 1873. *A catalogue of British Hymenoptera; Oxyura*. Entomological Society of London, London. i–viii + 1–27 pp.
- Masner, L. 1965. The types of Proctotrupoidea (Hymenoptera) in the British Museum (Natural History) and in the Hope Department of Entomology, Oxford. *Bulletin of the British Museum (Natural History) Entomology Supplement* 1.
- Masner, L. & García, J.L. 2002. The genera of Diapriinae (Hymenoptera: Diapriidae) in the new world. *Bulletin of the American Museum of Natural History*, 268, 1–138.
- Muesebeck, C.F.W. & Walkley, L.M. 1951. Superfamily Proctotrupoidea. P. 655–718. In: Muesebeck, C.F.W., Krombein, K.V. & Townes, H.K.. *Hymenoptera of America north of Mexico – Synoptic Catalog*. United States Department of Agriculture Monograph No. 2, Washington, DC.
- Nixon, G.E.J. 1980. Diapriidae (Diapriinae). Hymenoptera, Proctotrupoidea. *Handbooks for the Identification of British Insects*, 8(3di): 1–55.
- Rajmohana, K. 2006. Studies on Proctotrupoidea and Platygastroidea (Hymenoptera: Insecta) of Kerala. *Memoirs of the Zoological Survey of India*, 21(1): 1–153.
- Sharma, S.K. 1979. Studies on Indian Diapriidae (Proctotrupoidea: Hymenoptera). *Memoirs of the School of Entomology, St. John's College*, 7: 1–88.
- Sinclair, B.J. 2000. Immature stages of Australian *Austrothaumalea* Tonnoir and *Niphta* Theischinger (Diptera: Thaumaleidae). *Australian Journal of Entomology*, 39(3): 171–176.
- Yoder, M. J. 2004. Revision of the north American species of the genus *Entomacis* (Hymenoptera: Diapriidae). *Canadian Entomologist*, 136, 323–405.
- Yoder, M.J, Mikó I, Seltmann K.C., Bertone M.A., Deans A.R. 2010. A gross anatomy ontology for Hymenoptera. *PLoS ONE*, 5: e15991. DOI: 10.1371/journal.pone.0015991